



Southeast Alaska CloudburstChronicle

National Weather Service
Juneau, AK

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Quarterly Publication

Are you prepared for **WINTER?**

By Aimee Devaris

You should know what actions to take to protect yourself, family, pets, and property against winter weather.

There are several types of weather hazards to be prepared for during the winter season – heavy snow, freezing rain, blizzards, and wind chill.

In Southeast Alaska, heavy snow events may occur anywhere at sea level but are most common in the northern inner channels and along the northeastern Gulf of Alaska coast – namely in the communities of Haines and Yakutat. Heavy snow can immobilize a region and paralyze a city, stranding commuters, stopping the flow of supplies, and disrupting emergency and medical services.

Accumulations of snow can collapse buildings and knock down trees and power lines. In the mountains, where heavy snows are much more frequent, these events can lead to avalanches. The cost of snow removal, repairing damages, and loss of business has a large economic impact on cities and towns.

Ice storms are less common in Southeast Alaska, but they do occur periodically. Heavy accumulations of ice bring down trees, electrical wires, telephone poles and lines, and communication towers. Power and communications can be disrupted for days while utility companies work to repair the damage. Even small accumulations of ice cause extreme hazards to motorists and pedestrians.

(See WINTER - page 7)

In this issue... Winter Hazards, Road

And speaking of winter...

Where's the snow?

By Michael Richmond

As of January 1st, the airport, Juneau's primary official climate recording site, had only picked up 5.6 inches of snowfall since Oct 1. This is the leanest start of the snow season, since records began here in 1943.

Does this mean a snowless winter for Juneau, and other areas of Southeast Alaska? Hard to say, since the prevailing warm onshore flow pattern we have had this fall, could change at any time to a colder pattern.

There have been many winters with low snowfall, including 1987-88, when only 24.4 inches occurred, and 1986-87 and 1997-98, with only 35.5 and 35.6 inches, respectively. The long term average winter snowfall for the Juneau Airport is 98.4 inches.

Is our climate changing, perhaps because of "global warming," or is this some kind of cycle? (See article, p5.) It may be too soon to say, since records for Juneau have been kept only since 1943, and climate trends are studied on the order of centuries. It is worth noting that the years after 1976 had less snow on average than the years preceding. (See graph, p 2.)

In any event, as we all know, the weather in this region is very dynamic and could change dramatically in the span of a few days.

▶ WANTED ◀

REGIONAL WEATHER DATA

by Angel Corona

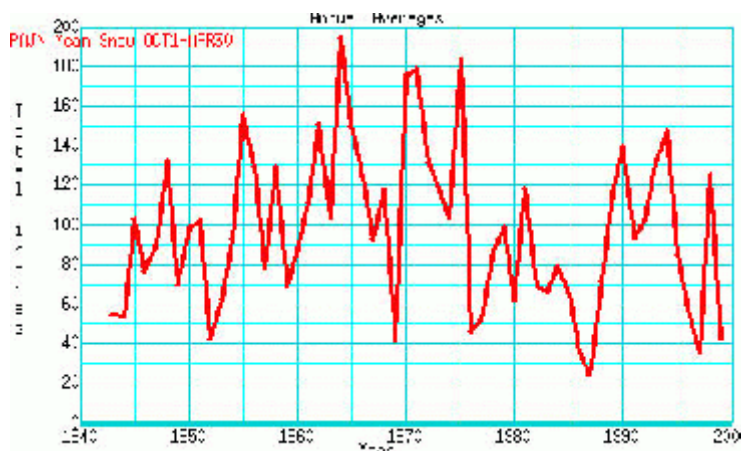
The Juneau Forecast Office is now issuing a Regional Temperature and Precipitation Product (RTP) twice daily. This product consists of the maximum temperature, minimum temperature, precipitation, snowfall, and snow depth for a 24-hour period.

We would like all of our cooperative and a-paid observers to be represented in the RTP. To accomplish this, we need your data once daily (even though it is a twice daily product).

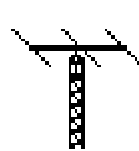
Getting your information on a daily basis will help the forecasters in our office immensely. Also, your data will be ingested in the national computers for use in forecast models. These models also help us and others such as the Alaska River Forecast Center in providing the best service to Southeast Alaska.

There are three ways for you to get your data to us.

- # The first way is via our web page. There is an easy form to fill out on the web, and then you submit the report. Our computer receives the data and sends the observation out. Also, the observation shows up on the Juneau forecaster's computer screen for immediate viewing.
- # The second way is via a ROSA phone. This is a programmable phone that you store your observation into. You then call a toll-free number to enter your data. This observation also shows up on the Juneau forecaster's computer screen.
- # The final way is to call the office. This product goes out on the AP wire for the media to use, and it also is available on our web site. '



Annual snowfall for Juneau, 1943 - present.
(See story on page 1 - Where's the Snow?)



Hamming It Up!

The National Weather Service (NWS) and the American Radio Relay League hosted the 2nd annual "Special Event" for amateur radio on December 1st and 2nd. Amateur radio operators participated from about 85 NWS offices to recognize the contributions that hams make to the NWS during times of severe and significant weather.

The Juneau Amateur Radio Club (JARC) and the Juneau NWS formed a collaborative group to operate from the NWS office on the Back Loop Road as KL7IG. The station employed a wide range of amateur radio bands and communication modes during the event. In fact, over 50 contacts were made including Florida, Michigan, Anchorage, and Fairbanks.

For more information on amateur radio and its contributions to the NWS please contact Laura Furgione (KL0XG), Meteorologist in Charge of NWS Juneau or Jerry Prindle (KL7HFI), President of the JARC. '

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Words of Winter

The National Weather Service issues a number of different forecast products to describe impending winter weather. The following is a description of each type of weather bulletin as they are defined for use within Southeast Alaska.

- < Advisory – An advisory will be issued when weather conditions are occurring which are potentially hazardous.
- < Watch – A watch is used to alert residents of a developing weather situation which is potentially hazardous.
- < Warning – A warning is issued when weather conditions are occurring or imminent which are hazardous to life and/or property.

An *advisory* is used for conditions that are less severe than the conditions for which a warning would be issued. A *watch* is used to highlight the potential for hazardous weather which is not yet occurring or imminent and is upgraded to a warning when the anticipated conditions materialize. *Warnings* are issued for the purpose of advising our partners and customers of weather conditions which may directly lead to loss of life or property.

There are generally five weather elements which you may be advised or warned for this winter...

Element	Advisory	Warning
Wind	≤40 mph	≤60 mph
Snow	4 inch/12 hr	6 in/12hr , 12in/24hr
Freezing Rain	any observed	measurable ice
Blizzard	none	35 mph whiteout
Wind Chill	~ - 40EF	~ - 70EF

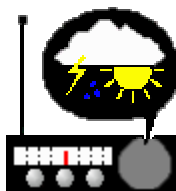
New Motoring Forecast Paves the Way for Smooth Traveling to

Canada and the Rest of Alaska

The National Weather Service in Juneau, in conjunction with the Meteorological Services Canada in Kelowna, B.C., began preparing detailed road forecasts for the Klondike Highway north from Skagway and the Haines Road northwest from Haines on November 1.

These forecasts set a new precedent in international forecast collaboration, and provide motorists with important weather forecast information for these roads, now that winter, with all of its potential driving hazards, has set in.

The forecasts are issued twice daily, at 9 am and 9 pm and are available at our web site (www.alaska.net/~jnufo) and over the NOAA Weather Radio in the Haines and Skagway vicinities, as well as at the Environment Canada web site (http://weather.ec.gc.ca/yukon_e.shtml) in metric units!



Where do you get your weather information?

- < NOAA Weather Radio broadcasts NWS warnings, watches, forecasts and other hazard information 24 hours a day.
- < Weather Radios equipped with a special alarm tone feature can sound an alert and give immediate information about a life-threatening situation.
- < NOAA Weather Radios are available at electronics stores, marine accessory stores and some mail order companies.

Seafarers' Spotlight

Aimee Devaris

By



In every issue, we will feature an article addressing a topic that is important to the mariners of this area. In recognition of the winter season, this issue will cover the causes and impacts of freezing spray.

If you have a suggestion for future marine-related article topics for the Seafarers' Spotlight, please let us know!

Vessel Icing

Maritime icing can be very hazardous, especially to smaller vessels. It is important to understand the cause of this winter hazard and the effect it may have on your vessel.

Icing refers to the generation of a coating of ice on the ship's superstructure or exposed surfaces. This accumulation may be caused by a number of factors such as freezing precipitation, sea spray, or super-cooled fog. In Alaskan waters, 90% of all ship icing is caused by spray generated by high winds.

Freezing spray is the most dangerous form of icing. It occurs when the air temperature is below the freezing temperature of the sea water, about 28°F (-2°C). The spray freezes on the exposed surfaces of the vessel to produce clear ice or glaze. At lower temperatures, the ice may be opaque, and at temperatures below 0°F (-18°C), the spray will usually be in the form of non-adhering small dry ice crystals.

With air temperatures below 28°F (-2°C), freezing spray is observed in winds of 18 knots or higher. The lower the air temperature and the stronger the wind, the more rapid is the accumulation of ice.

A low sea temperature also increases the rate of accumulation of ice.

Q: How do I find out if freezing spray is expected?

A: Marine forecasts for the Gulf of Alaska and Inside Passage include freezing spray information when icing is predicted.

Marine forecasts are available on the Alaska weather line at 790-6850 or toll-free at (800) 472-0391 or on the

Sea spray generation depends on the wave height and period of the waves. Waves in turn depend on the speed, duration, and fetch of the wind. The amount of spray generated depends on factors such as the sea state, the vessel length, freeboard, hull shape, and vessel heading and speed relative to the prevailing seas. As the dominant wavelength approaches the vessel length, vessel vertical motion is enhanced. This interaction between the vessel and the sea causes an increase in the amount of spray.

It should be emphasized that an accumulation of ice will, in itself, speed up the rate of further accumulation. The ice already formed increases the effective cross section of rigging, mast, rails, and antennae exposed to the spray.

The added weight of the ice reduces freeboard and therefore reduces the range of stability of the vessel. Ice formed high on masts, rigging, and superstructures alters the vertical center of gravity, and the vessel may become top-heavy and capsize. Ice accumulation on the windward side of a ship, caused by spray from wind abeam of the ship, can create a shift in the ship's transverse center of gravity resulting in a list.

The Pacific Decadal Oscillation

The key to long-range forecasting in Alaska?

By Carl Dierking

You have probably heard a lot lately about El Niño and its effects, but you might be surprised to learn that climatologists have identified other long term climate cycles that also may have seasonal impacts. One that appears to be important in the North Pacific and Alaska is a climatic phenomenon known as the Pacific Decadal Oscillation, or PDO.

The Pacific Ocean, largest and deepest of the world's oceans, suffers periodic mood swings that produce El Niño-like shifts in the ocean's temperature every 20 to 25 years. The term PDO was coined in about 1996 by Steven Hare at the University of Washington. He, along with colleagues Nathan Mantua, Yuan Zhang, Robert Francis and Mike Wallace discovered the pattern as part of his work on fish population fluctuations. For the PDO, the last "cold" phase ran from the 1960 to the early 1970s and the "warm" phase started in the late 1970s and ran through the mid 1990s. Many climate experts now

believe there is evidence the PDO has now begun its next shift toward a "colder" phase.

Researchers have found a strong correlation between the climate in many areas of the North Pacific and the PDO. The graph (right) shows the 5-year average winter (Nov 1 - Mar 31) temperatures for 4 locations in Southeast Alaska. The cold period during the 1960s and early 1970s, followed by a warm peak in the 1980s and early 1990s, is similar to the most recent cold and warm phases of the PDO. Also notice that during the later part of the 1990's, the average winter temperatures have just begun to cool. This trend matches other observations suggesting that the "cold" PDO shift is underway.

PDO FAQs:

Q. How does the PDO affect climate?

A. A change in location of cold and warm ocean water masses alters the path of the jet stream, and the jet stream steers storms across the North Pacific and Canada. A "colder" PDO phase would tend to move storms south or west of Alaska with predominately high pressure over the state.

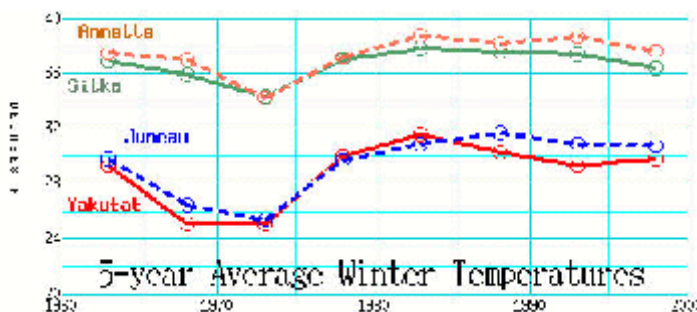
Q. So, if the PDO cycle is returning to a cold phase, will the current winter will be colder than last year?

A. Not necessarily. As with any climate cycle, the PDO is evaluated over long periods. Year to year variations are much more erratic and any single year may be completely out of phase with a long-term trend. For example, during the previous "cold" phase of the PDO, even though the average winter temperature for Juneau from 1965-1970 was around 25EF, one of those winters, 1969-70, was actually fairly warm with an average temperature of 32.1 EF. During the recent "warm" phase of the PDO, the 1995-2000 winters for Juneau averaged around 30EF, but one winter 1995-96 was fairly cold with an average temperature of 27.1 EF.

Another complication is the fact that it is not yet clear how significant this "cold" phase of the PDO will be. As you can see in the graph, recent years have only begun to show downward temperature trends, so it is still too early to evaluate what "cold" phase PDO strength and duration we might expect.

Q. If we actually do enter a different phase of the PDO, how long will it last?

A. We don't know, but based on past evidence, it is likely to last 20-25 years.



Q. What about El Niño and La Niña?

A. These will still continue, they are a pattern that can be thought of as lying on top of any large scale temperature distribution determined by the Pacific Decadal Oscillation. '

Weather Watchers

Southeast's Spotter Network



Forecasters in Juneau have a new weapon in the battle for accuracy in weather prediction – the Southeast Alaska Spotter Network. These important volunteers provide ground-truth observations that were previously unavailable. Spotter reports, when integrated with radar signatures, satellite imagery, and other data, can be critical in the issuance of weather warnings and advisories. This saves lives and protects property, which is the mission of the NWS.

What do our spotters report? So far this fall, we have received information about high winds, heavy rains, mud slides, wind damage, hail, and snow. Our vital weather watchers have also notified us on that rare occasion when our forecast was wrong!

The spotter program was launched in September with a training session in Juneau at the NWS office. Courses were also given in Sitka and Yakutat during the fall, and the spotter training initiative will continue to spread across the panhandle this spring.

Because many Southeasterners live remotely, a correspondence-type spotter course was created, along with a web-based version. This has enabled the spotter network to grow much more quickly than would otherwise be possible, and we have recruited spotters in a number of remote locations, including Port Alexander and Tenakee Springs.

If you would like more information about the Southeast Alaska Weather Spotter Program, please contact Aimee Devaris at 790-6803.



Breaking News for Spotters...

We appreciate your dedication and recognize our most active spotters with special prizes and awards. This quarter, our most active spotter was Martha Reeves of Juneau with 10 reports.

Congratulations, Martha! You will receive a 2001 Alaska Weather Calendar for your effort!



The New Voice of the NWS

by Ed Plumb

NOAA Weather Radio has undergone some major changes in the past year. As many dedicated listeners know, the broadcast voice is now produced by a computer, which may not be as pleasant or discernible as a human voice.

Although some are unhappy with this change, there are many advantages to the new automated system, which include:

- Watches, warnings, and forecasts are broadcast seconds after transmission.
- Meteorologists have more time to monitor the weather and issue forecasts and warnings.
- Weather observations from stations across Southeast Alaska are updated on an hourly basis.
- Listeners become familiar with the computer pronunciation, rather than having to adjust to various human voices.
- A computer works 24 hours a day, seven days a week without a break...and never gets tired!

NOAA Weather Radio can be heard in most communities across Southeast Alaska, through continuous broadcasts on Marine Radio VHF Channels 1, 2, and 3.

Good News! Upgrades to the computer voice are on the horizon, so stay tuned... '

Cloudburst Chronicle

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Contributors: Laura Furgione, Carl Dierking, Angel Corona, Michael Richmond, and Ed Plumb

Your comments and suggestions are welcome!

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(WINTER - Continued from page 1)

Sometimes winter storms are accompanied by strong winds creating blizzard conditions with blinding snow, severe drifting, and dangerous wind chill. Strong winds with these intense storms and cold fronts can knock down trees, utility poles, and power lines. Severe storms near the coast cause coastal flooding and beach erosion as well as sink ships at sea. In Southeast Alaska, winds descending off the mountains gust to 100 mph or more damaging roofs and other structures.

The wind chill is based on the rate of heat loss from exposed skin caused by combined effects of wind and cold. As the wind increases, heat is carried away from the body at an accelerated rate, driving down the body temperature. Severe wind chills (-25 to -70EF) are common along the Lynn Canal corridor during the winter months. These wind chills cause frostbite to begin in less than one minute. It's important to remember that animals are also affected by wind chill.

Everyone is potentially at risk during winter storms. The actual threat to you depends on your specific situation. Recent data indicate the following, related to ice and snow:

- < About 70% of winter weather-related fatalities occur in automobiles.
- < About 25% are people caught out in the storm.
- < Majority involved are males over 40 years old.

Related to exposure to cold:

- < 50% are people over 60 years old.
- < Over 75% are males.
- < About 20% occur in the home.

When caught in a winter storm, these tips could save your life. If you become stranded outdoors, find shelter, stay dry, and cover all exposed parts of your body. If no shelter is available, prepare a lean-to, wind-break, or snow cave for protection from the wind. Build a fire for heat and to attract attention, and place rocks around the fire to absorb and reflect heat. Finally, do not eat snow – it will lower your body temperature. Melt it first.

If you are stranded in a car or truck, stay inside of it. Disorientation occurs quickly in wind-driven snow and cold. Run the motor about ten minutes each hour for heat, and open the window a little for fresh air to avoid carbon monoxide poisoning. You should also make sure the exhaust pipe is not blocked. Make yourself visible to rescuers by turning on the dome light at night when running engine, tying a colored cloth (preferably red) to your antenna or door, and raise the hood indicating trouble after snow stops falling. And, exercise from time to time by vigorously moving arms, legs, fingers, and toes to keep blood circulating and to keep warm.

Make yourself visible to rescuers by tying a colored cloth (preferably red) to your antenna or door...

If you are home during a winter storm, stay inside. When using alternative heat from a fireplace, wood stove, space heater, etc., be sure to use fire safeguards and properly ventilate. If you have no heat, close off unneeded rooms, stuff towels or rags in cracks under doors, and cover windows at night.

During severe winter weather, it is extremely important to get plenty to eat and drink. Food provides the body with energy for producing its own heat. Keep the body replenished with fluids to prevent dehydration. Wear layers of loose-fitting, lightweight, warm clothing. Remove layers to avoid overheating, perspiration, and subsequent chill.

One more winter weather tip: keep ahead of the storm by listening to NOAA Weather Radio, commercial radio, and television for the latest winter storm watches, warnings, and advisories. '